

8. REGULATIONS AND ADVISORIES

The international, national, and state regulations and guidelines regarding perchlorate in air, water, and other media are summarized in Table 8-1.

ATSDR has adopted the NAS (NAS 2005) chronic RfD of 0.0007 mg/kg/day for the chronic oral MRL for perchlorate. NAS based the RfD derivation on a NOEL of 0.007 mg/kg/day for changes in thyroid hormone and TSH in serum, and thyroidal uptake of radioactive iodine in volunteers exposed to potassium perchlorate in water for 14 days (Greer et al. 2002). An uncertainty factor of 10 was applied to the NOEL for the protection of sensitive subpopulations.

EPA (IRIS 2005) has developed an RfD of 0.0007 mg/kg/day for perchlorate based on the NAS (2005) recommendation to use a NOEL of 0.007 mg/kg/day for changes in thyroid hormone and TSH in serum, and thyroidal uptake of radioactive iodine in volunteers exposed to potassium perchlorate in water for 14 days (Greer et al. 2002) as the basis for an RfD. An uncertainty factor of 10 was applied to the NOEL for the protection of sensitive subpopulations.

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Table 8-1. Regulations and Guidelines Applicable to Perchlorates

Agency	Description	Information	Reference
<u>INTERNATIONAL</u>			
Guidelines:			
IARC	Carcinogenicity classification	No data	IARC 2004
WHO	Air quality guidelines	No data	WHO 2000
	Drinking water quality guidelines	No data	WHO 2004
<u>NATIONAL</u>			
Regulations and Guidelines:			
a. Air			
ACGIH	TLV (8-hour TWA)	No data	ACGIH 2004
NIOSH	REL (10-hour TWA)	No data	NIOSH 2005
OSHA	Threshold quantity for highly hazardous chemicals for general industry		OSHA 2005b 29CFR1910.119, Appendix A
	Ammonium perchlorate	7,500 pounds	
	Threshold quantity for highly hazardous chemicals for construction industry		OSHA 2005a 29CFR1926.64, Appendix A
	Ammonium perchlorate	500 pounds	
b. Water			
EPA	National primary drinking water regulations; monitoring requirements for unregulated contaminants		EPA 2005a 40CFR141.40 (a)(3)
	Perchlorate		
	EPA analytical method	314.0	
	Minimum reporting level	4.0 µg/L ^a	
	Sampling location	EPDTS ^b	
	Period during which monitoring be completed	2001–2003	
c. Food			
	Substances for use as basic component of single and repeated use food contact surfaces; closures with sealing gaskets for food containers		FDA 2005 21CFR177.1210 (b)(5)
	Potassium perchlorate	Not to exceed 1%	
d. Other			
ACGIH	Carcinogenicity classification	No data	ACGIH 2004
EPA	Carcinogenicity classification ^c	Not likely to be carcinogenic	IRIS 2005
	RfC ^d	Has not been derived ^c	
	RfD ^d	0.0007mg/kg/day	

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Table 8-1. Regulations and Guidelines Applicable to Perchlorates

Agency	Description	Information	Reference
NATIONAL <i>(cont.)</i>			
EPA	Standards for owners and operators of hazardous waste TSD facilities; potentially incompatible waste; the mixing of Group 6-A (perchlorate) with Group 6-B may have the potential consequence as noted	Generation of toxic hydrogen cyanide or hydrogen sulfide gas	EPA 2005b 40CFR264, Appendix V
NTP	Carcinogenicity classification	No data	NTP 2005

^aMinimum reporting level was established at a concentration, which is at least 1/4th the lowest known adverse health concentration, at which acceptable precision and accuracy has been demonstrated in spiked matrix samples.

^bEntry Points to the Distribution System (EPTDS), after treatment, representing each non-emergency water source in use over the 12-month period of monitoring; this only includes entry points for sources in operation during the months in which sampling is to occur. Sampling must occur at the EPTDS, unless the State has specified other sampling points that are used for compliance monitoring under 40 CFR141.24 (f) (1), (2), and (3). See 40 CFR 141.40 (a) (5) (ii) (C) for a complete explanation of requirements, including the use of source (raw) water sampling points.

^cAn inhalation RfC has not been derived because the available inhalation data are insufficient to characterize dose-response relationships or portal-of-entry modulation of internal dose.

^dIRIS record for perchlorate and perchlorate salts include ammonium perchlorate, lithium perchlorate, potassium perchlorate, and sodium perchlorate.

ACGIH = American Conference of Governmental Industrial Hygienists; CFR = Code of Federal Regulations; EPA = Environmental Protection Agency; EPTDS = Entry Points to the Distribution System; IARC = International Agency for Research on Cancer; IRIS = Integrated Risk Information System; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TLV = threshold limit values; TSD = treatment, storage, and disposal; TWA = time-weighted average; WHO = World Health Organization